511,788

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

14 OCT 2004

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 December 2003 (11.12.2003)

PCT

(10) International Publication Number
WO 03/102133 A2

(51) International Patent Classification[7]: C12N

(21) International Application Number: PCT/US03/15192

(22) International Filing Date: 13 May 2003 (13.05.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/380,231 13 May 2002 (13.05.2002) US

(71) Applicant *(for all designated States except US)*: **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 Franklin Street, 5th Floor, Oakland, CA 94607-5200 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **ALLBRITTON, Nancy** [US/US]; 22 Virgil Court, Irvine, CA 92612 (US). **SIMS, Christopher, E.** [US/US]; 22 Virgil Court, Irvine, CA 92612 (US). **HU, Shuwen** [CN/US]; 6107 Palo Verde, Irvine, CA 92612 (US). **REN, Xuegin** [CN/US]; 6107 Palo Verde, Irvine, CA 92612 (US). **LI, Guann-Pyng** [US/US]; 20 Young Court, Irvine, CA 92612 (US). **BACHMAN, Mark** [US/US]; 28 Perkins, Irvine, CA 92612 (US).

(74) Agents: **MULVILLE, Kurt** et al.; Orrick Herrington & Sutcliffe LLP, 4 Park Plaza, Suite 1600, Irvine, CA 92614-2558 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

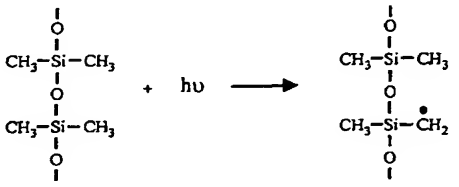
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

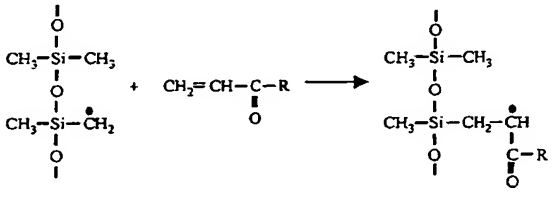
[Continued on next page]

(54) Title: CHEMICAL MODIFICATIONS TO POLYMER SURFACES AND THE APPLICATION OF POLYMER GRAFTING TO BIOMATERIALS

I.



II.



R: –OH	Acrylic Acid (AA)
–NH_2	Acrylamide (AM)
–$N(CH_3)_2$	Dimethylacrylamide (DMA)
–OCH_2CH_2OH	2-Hydroxyethylacrylate (HEA)
–$O(CH_2CH_2O)_nCH_3$	PEG monomethoxylacrylate (PEG)

(57) Abstract: Polymer-based biomaterials are popular due to ease of fabrication and low costs. However, many polymer substrates have undesirable surface properties. The invention provides a procedure to covalently apply a graft polymer to the surface of a polymer substrate by ultraviolet graft polymerization. The graft polymer is formed from monomers such as PEG, AA, monomethoxy acrylate PEG, HEMA, or DMA. Also, mixed monomers may be used to create the graft and the surface properties of the graft may be tailored for different properties, including hydrophobicity, friction coefficient, electroosmotic mobilities and electrophoretic separations. The invention has particular utility in tailoring surface chemistries in ocular lenses and polymer microdevices.

WO 03/102133 A2